DOCUMENT RESUME

ED 449 548 EA 030 715

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TITLE Educational Reforms in Post-Revolutionary China and Taiwan: A Comparative Study of Contrasting Paradigms.
PUB DATE 1999-00-00
NOTE 27p.
PUB TYPE Reports - Descriptive (141)
EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Comparative Education; *Economic Development; Economic Opportunities; Educational Change; Elitism; *Equal Education; Foreign Countries; Higher Education; Humanities; Private Schools; Public Education; *Science Education; Social Stratification; *Womens Education
IDENTIFIERS *China; *Taiwan

ABSTRACT

Despite many differences, both China and Taiwan have given priority to a variety of education reforms since 1949. With a U.S. model and aid, the Taiwanese educational system has largely achieved the 15 percent enrollment threshold identified by Hayhoe as required to support economic expansion. In China, major reforms of the 1970s and 1980s leave China, at 10 percent of that target, short of the threshold. Comparing both nations, this paper adds significant data to Hayhoe's four indicators of quality: (1) role of private institutions (2) gender equality; (3) scientific focus; and (4) prevalence of short-cycle versus 4-year institutions. A fifth indicator, the role of government, is included. In both nations, private schools contribute to stratification and inequalities in higher education. Women confront substantial obstacles in both, though with fewer students and educators in higher education, women seem worse off in China. Both nations focus heavily on science, with Taiwan largely successful, and China risks "technocracy" by neglecting the humanities and social sciences. In Taiwan, short-cycle schools largely promoted equality and industrialization and are now in decline, while in China, short-cycle schools no longer promote greater equality even as they proliferate. Centralization in both implies ideological controls and pressures in education. Although female enrollment is roughly equal, China risks losing gains in equality from the Mao era. In China, reintroduction of standardized entrance exams and the end of guaranteed employment promote nepotism and a decline in rural schools and women's participation. (Contains 14 references.) (TEJ)

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ED 449 548

Educational Reforms in Post-Revolutionary China and Taiwan: A Comparative Study of Contrasting Paradigms

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Introduction

This paper will review the educational systems in both post-revolutionary "Chinas", the People's Republic of China (PRC), and the Republic of China (ROC), or Taiwanese, educational systems from their point of departure when the Nationalist's Army fled to Taiwan in 1949. Since the early post-revolutionary governments first been to enact contrasting social and political agendas, a priority for each has been educational reforms. One government had a much smaller population and was assisted from the late-40's with aid packages and an on-going military pact. By contrast, the over-populated Mainland presented Mao with an overwhelming number of ongoing obstacles and challenges. Consider also that Mao had to rely upon the PRC's own resources. These resources were often scarce due to a number of influences, not the least of which were a variety of ambitious but failed reform policies.

Early in the 20th century, the Nationalists, allied with the young leaders of the emerging communist party, overthrew the Japanese Manchu government in 1911; however, the Japanese continued to occupy Formosa (Taiwan) until after the end of the Second World War. This is not to imply these two countries were reunited. If they were, it was only for a very short time.

In 1949, the Communist Party led by Mao Tse Tung drove their former partners in war from the Mainland. General Chiang Kai Shek and his Nationalist followers fled to Taiwan. There, the government of the Republic of China was established in Taiwan with its hard-line leaders whose chief priority was to defeat Mao's armies and recapture the Mainland.

The 1949 accession of the communist government is one of the most significant events of the Cold War. Within a remarkably short period, significant changes were implemented in their economy and society. Although the PRC remained aligned with the global socialist forces worldwide, following Mao's death, an ensuing power struggle occurred in the 1970s and the government endorsing Deng Xaoping as their leader took control. Xaoping's China focused on its "open policy" toward the international community and underwent continual liberalization processes which have resulted in extensive political, economic and educational reforms.

From the beginning of its occupation of Taiwan, Shek's Marshall policies were a priority in order to ensure protection from Mainland forces. At this time, the United States government signed a number of military-protection pacts.

By the 1970's, following President Nixon's historical meeting with Chairman Mao, Taiwan lost its United Nation's recognition as the legitimate representatives of the Chinese by the UN. To regain international prestige, Taiwan has been moving toward numerous democratic reforms, holding its first free presidential elections in the early 1990's. As a consequence, some organizations such as the Asian Economic and Cooperative Development organization (AECN) have allowed Taiwanese participation.

Taiwan's Educational Reform Movements

Because Japanese occupation of Taiwan continued from the latter years of the 19th century and lasted until the end of war, the Japanese system educational system remained the model until 1949.

At the time of the Japanese occupation of the island of Taiwan, the ruler of Japan, Meiji, was a notable reformer who radically transformed the educational system in Japan,

turning toward a more westernized one. However, when the exiled Chinese government came to Taiwan, they brought with them the educational philosophy based upon the work of Dr. Sun Yat Sen. His program had been put into place on the Mainland when the Japanese had been forced out of China early in the 20th century.

Later, when Taiwan regained its independence, it kept a wary distance from any involvement with Mao's PRC. Taiwan strongly favored implementing a Western higher educational model patterned after the United States. One of their first goals was, however, to replace the Japanese educators who had dominated their universities with their own intellectuals and teachers who, by coincidence and by great convenience, had received their advanced educational training in the United States — the model for Taiwan's educational reforms.

When the Nationalists began to rule Taiwan in 1949, there were approximately 1,500 hundred schools. Due to large amounts of foreign aid given by the United States, by 1960, this figure had doubled. By 1969, The "Compulsory Education Act" was passed and the number of required years of schooling increased from 6 to 9. Primary and junior high schooling were offered free of charge and were mandatory. In the 1970's, Taiwan's economy was 80% export driven and their strengthening economy gave them back the global prestige they had lost upon losing UN recognition. At that time, there were more than 4,000 schools. When considering primary and secondary schools, every decade shows approximately 1,000 additional schools providing opportunities for people seeking a trade and some sort of higher education. By 1990, there were approximately 6,000 schools. (Ministry of Education, 1988). The number of junior colleges and four-year

institutes continued to climb substantially to meet the newly created employment requirements.

Like the Chinese of the Mainland, the educational system in Taiwan was used to propagate the State's politics due to the fact that the people were under Marshall law to help insure rapid transformation coupled with stability. Yet, a significant consideration remains. Taiwan's educational system was heavily influenced by their early support from the United States. In a similar fashion, their economic policies continued to be aligned with Western models of industrialization and modernization.

At the end of the 1980's, Taiwanese mass literacy had been achieved. Today however, traces of the high numbers of illiterates still exist in that women over 65 still have illiteracy rates of approximately 50% (International Bank, 1999). Despite the existence of scattered failures, primary, secondary and higher education has continued to improve in Taiwan. The following example clearly illustrates these improvements--although the number of junior colleges was greater than the number of 4 year schools in the 60's and 70's, they have declined in percentages while there has been a greater increase of 4-year higher educational institutions. It was in the 1970's that Taiwan reached the 15% critical enrollment mark to indicate that they had achieved a mass higher education system which corresponded with their growing economy (Hayhoe, 1995). Today, the number of higher education institutions continues its momentum toward change. Now, graduate education has shown sharp increased enrollment, a trend that began in the 1980's.

People's Republic of China's Educational Reform Movements

In the beginning of the 20th century, the Chinese education system was ineffectual and in many places, non-existent. Due to constant wars with Japan and its continual internal unrest, China had a high number of illiterates, especially in its rural areas. Today, however, China has the largest school system in the world. In 1995, China had 1.21 billion people and 196 million school students (Encarta, 1995).

China has a long and rich cultural tradition in which education has played a major role. Throughout the Imperial dynasty, as with all Confucian societies, only the educated held positions of social and political leadership. Still and all, because of the elitist system, it is estimated that as late as 1949, a mere 25% of China's population was literate (Fan, 1997). To the Chinese Communists, illiteracy was an obstacle for the promotion of their political programs. Therefore, like their Taiwanese counterparts, the Communists combined their political ideology with educational development. Congruent with Marxist ideologies, the dominant goal of education was to reduce the sense of class distinction. This was to be realized by reducing the social and economic gaps that existed between the educated elite and the manual laborer, between those in the city and those in the country, and between men and women.

One of the most ambitious programs of the Communist Party was the establishment of universal public education for its masses. In the first two years of the new government, more than 60 million peasants were enrolled in "people's schools". Land grants were given to the peasants during the land revolution and their living standards quickly increased. As a result of their renewed statuses, from 1949 to 1952, primary school enrollment grew from about 25% to 50%. Enrollment continued to drastically

increase until 1958 to about 80% (Fan, 1997). Starting in 1958, enrollment dropped to 56% by 1962 due to economic slowdown as a result of Mao's failed "Great Leap Forward" and three years of devastating famine. Shortly thereafter, the economy recovered and the rural schools grew rapidly again totaling approximately 87% primary school enrollment by 1965 (Fan, 1997).

The most radical changes in the education system in the PRC, however, took place between 1966 and 1978. During "the Great Proletariat Cultural Revolution" (1966 – 1969), virtually all classrooms in China were closed as over 100 million youths who had been enrolled in primary and secondary school became increasingly involved in Mao's campaign to further disengage the highly educated from their positions of prestige within the government and the Ministry of Education. By 1968 - 1969, primary and secondary schools began to reopen, but tertiary educational institutions remained closed until 1972. However, according to Fan (1997), primary school enrollment continued to increase slowly at first and then more steadily so that by 1976, the enrollment rate was over 80%. As a result of the continued primary and secondary education efforts, the 1990 census showed the literacy rate has climbed to over 97 percent in Mainland China (Fan, 1997).

Following Mao's death in 1976, a major review of China's educational policies began. As a result of the emphasis on economic rather than societal concerns, and because of the renewed interest in the development of science in Chinese education, curricula again came to resemble those of the pre-Cultural Revolution years. Primary and secondary schooling were gradually readjusted to 12 years of study (although only nine are compulsory), and high school graduates were no longer required to go to the countryside for two years of manual labor before competing for college positions.

In 1986, The Chinese "Law of Compulsory Education" was passed and nine years of primary and secondary education became tuition free. Private schools and specialized institutes have been allowed to open. Education has been more decentralized and the trend has been toward greater numbers in higher education. By the early 1990s, about 121.6 million pupils were enrolled in primary schools, and about 52.3 million students were enrolled in secondary schools. About 2.04 million students enrolled in China's 1,075 institutions of higher learning. Higher education comprises about 3.5% of the population. By 2,000, this number is expected to be about 10% of the population. Yet, this is still not the critical mass of 15% required to consider a country capable of providing mass higher education for economic expansion (Hayhoe, 1995).

Comparative Study

After Taiwan seceded from Mainland China in 1949, the new government established by Chiang Kai Shek initially resisted any affiliation with the Mainland. A low-intensity state of war existed. Supported by the United States initially, the ROC had cut all ties with the Mainland until 1977. However, since 1949, both followed divergent paths in order rebuild their economies and resolve their individual impoverished and illiterate masses, albeit for different reasons. The fact remains that both have used their respective educational systems to inculcate and promulgate their political ideals and similarly, both nations have implemented recent liberal reforms in their respective politically "closed" policies. While the PRC continues to experiment with more open democratic ideologies regarding their economic policy of tenuous "free-market socialism", ironically Taiwan has moved toward an established political pluralism. Thus, these congruent trends give educators an interesting cause for comparisons. The contrast is just as notable, i.e. Taiwan

has liberalized for political reasons, China has done so for technological and financial reasons. This section of this paper will review some of the educational measures taken and their corresponding results as indicators of equality.

Hayhoe uses the four indicators of an equality continuum to designate the transition from elite to mass higher education in her paper: establishment of private institutions; gender equality in the educational system; percent of science and technology students; and short-cycle versus 4-year institutions. These indicators are thought to show establishment, or lack thereof, of the equality in an educational system. This paper expands and adds data to her four points. Moreover, a fifth indicator of equality is added in the conclusion: the role of the government in the educational system is examined.

TABLE 1

Higher Education Expansion in East Asian Countries

(By Percentage of Students)

Taiwan Total Enrollment	% Female	% Sciences	% Short Cycle	% Private
1960	21	46	22	19
1965	29	42	35	51
1970	39	45	54	64
1980	46	51	54	69
1990	43	51	57	73
1995	48	NA	55	73

PRC Total Enrollment	% Female	% Sciences	% Short Cycle	% Private
1960	24	82	19	0
1965	27	82	5	0
1970	N.A.	89	100	0
1980	23	75	25	0
1990	34	68	36	0
1995	30	NA	NA	NA

Note. The data from 1960 to 1990 are from "Focus on higher education in East Asia and among East Asians. An Asian multiversity? Comparative reflections on the transition to mass higher education in East Asia." by Ruth Hayhoe, 1995, Comparative Education Review 39(3), 299-321. The years later than 1990, were added from the Statistical Yearbook of the Republic of China and the World Yearbook, 1998

Private Institutions

The number of private versus public institutions and the level of family financial support versus government supports can be used an indicators of equality in education. Depending on the quality of education in a private sector, privatization can either assist in creating more educational equality by providing slots. It can also hinder equality when comparing schools' reputations, their statuses and the prestige enjoyed by their graduates.

Taiwan

Taiwan has developed along public and private lines since the 1950's. Taiwan's rapid expansion of higher education was mostly due to the rapid increase in its number of public and private institutions. In 1961, there were 7 public and 9 private institutions of higher education. In 1990, there were 39 and 46 respectively. Finally, by 1997, there were 51 and 78 respective institutions. Clearly both the public and private sector are expanding with the private sector outpacing the public sector. (International Bank, 1999) Since the 1960's, the private sector has had higher enrollments for undergraduates in tertiary education. Although Hayhoe argues that familial support is noted by this trend which may indicate that more equality has been achieved, it may also be a significant indicator of the lack of equality in a system. Unfortunately, in Taiwan, lower income families pay a higher price in the private sector. This is due to the problems encountered when children of lower income families compete with wealthier children in the entrance exams for the more prestigious public school seats. Furthermore, this inequality is exacerbated by the recent concern about the decline in standards in private tertiary institutions. Most Asian systems have large public schools of higher education, which are generally considered to be the

most elite. This educational scenario serves to create stratification patterns in commercial and government employment positions and in Taiwan. As with most of Asia, the notion of "Degreeocracies" is quite prevalent with graduates of the best schools going on to get the top private and public employment positions (Hayhoe, 1995). This is especially true in Taiwan where Confucian educational ideals have been inculcated into a society and the best educated are expected to be the top government officials and hold the nation's top positions.

China

Since 1949, the Chinese government had been the sole support for education until the 1980's, when other means of financing options were offered to coincide with China's developing a market socialist economy. Currently, China has inplemented 3 systems of fee payment for attendance at a university. The first method provides free public higher education for a very highly qualified few. Secondly, research and commercial firms are merging to pay for a larger percentage of higher education for talented students who will be working for them after graduation, and finally, fee paying to large "key" schools and private schools has been implemented for the less academically talented. Obviously, the best students go to state universities for free or via corporate sponsor while the second tier pays fees to 4-year university programs.

Because of low numbers of Chinese 4-year higher education systems due to their demise in the Cultural Revolution, the number of public institutions has not been enough for the swelling demands. Therefore, to keep up with the demands for the larger numbers of students looking to enroll in its higher educational systems, China has begun the opening of private universities in 1993 starting with 17 new colleges. By late 1993, there

were a large number of applications to open private higher education institutions and colleges (Law, 1995). This current privatization trend is expected to grow based upon the fact that these professors are paid more than public university colleagues and therefore, can these schools can attract highly qualified professors and subsequently, better students. The State limits private institutions in China in that these institutions must have local partners that are monitored by the government. However, because they do not receive state financing and their contributions to the development of science and technology are much needed, these schools are more autonomous than public schools. This is not to imply that the State does not closely regulate these schools and their curriculums, but in some case, their curriculums offer courses based upon market expansions and such course do not exist at the State institutions. Therefore, it is doubtful that curricular standards exist for these programs.

Furthermore, there are not enough graduate schools to keep up with the demand as graduate school enrollments are growing. As a result, the better students and those of the more elite are attending graduate school overseas, which in a broader sense can be considered a type of privatization as the State certainly cannot regulate these courses. This trend may also serve to further create inequality in their rapidly changing higher educational system.

Gender Issues in Education

Table 2

Number of Women Faculty in Taiwanese Higher Education (tertiary)

	% of Faculty in Public Institutions	% of Faculty Private Institutions	% of Faculty at all Higher Ed Institutions
1968	18	23	20
1970	20	24	22
1980	23	32	28
1990	25	37	31
1995	27	41	34

Note. Derived from the Statistical Yearbook of the Republic of China - 1998, p. 77.

Taiwan

From the table above, in 1990, Taiwan's female higher education population was 43% of attendees, and by 1995, women comprised more than 50% of the higher education enrollments. Upon closer examination, this is not to imply that women are on equal par with men. In Taiwan most women are in the less elite schools and cluster in social sciences and humanities. The women also tend to be more concentrated in the junior colleges and the private sectors than their male counterparts, thus giving them less advantage as well. This indicates that women are not as well-equipped to go into the higher employment positions which may lead to less employment opportunities and lesser salaries than their male counterparts.

In reviewing Table 2, the number of women faculty members in Taiwanese higher education has grown since the sixties. What is interesting however, is that the number of women professors in the less prestigious private institutions has grown faster than the more public school rates, which seem to have been at about 25% for the last 20 years (International Bank, 1999). Although this is indicative of the fact that the equality issues of gender although not as severe as 50 years ago, when many women were still illiterate, it does indicate that the gender gap is still an issue in Taiwanese society. Like their female counterparts in several parts of the world, they feel they need more education to compete with men with less education and they have trouble achieving recognition and access to the top posts.

China

Currently, women in China compose 4% of the illiterates, 47% of primary students, 44% of the secondary students and only 33% of the higher education students (World Bank, 1999). In the past, China had high numbers of women enrolled in higher education in the seventies, and a large number of those were in the sciences even though their education was predominantly in the short-cycle schools. (Hayhoe, 1995). Yet, since the 1980's, women have been increasingly enrolling in the social sciences in China, and their numbers in graduate schools had dropped to 25% master's students and 11% doctoral students by 1995. Additionally, men are becoming increasingly more prejudice against females with higher levels of education unlike the previous generation (Hayhoe, 1995). Moreover, the educated women of China are discussing the "Japanization" of women's education where universities are rapidly becoming finishing schools for "husband hunting". Like their Taiwanese counterparts, female intellectuals feel that more education than their male counterparts is becoming necessary to compete and graduate studies are

the only way in which they can compete for the same jobs as men with bachelor's degrees. Since the elimination of the Chinese government's job placement program and the initiation of the commercialization of industries, women are finding it difficult to obtain good jobs because the professional sector is reluctant to pay for maternity benefits (Hayhoe, 1995).

As of 1996, Chinese women comprised 47% of the primary teachers, 36% of the secondary teachers, and 30% of the faculty in higher education. It seems that women in China are worse off than their female counterparts in Taiwan as they have lesser proportions of students and educators in the higher educational sectors (World Bank, 1999).

Science and Technology

Hayhoe (1995) discusses the number of science and technology students as important to determine if the social sciences and humanities are being given any emphasis in the curriculum or if the governments are creating "technocracies" rather than broader cultural transformations.

Taiwan

As Taiwan has continued its industrialization process and become a major manufacturer in Asia, science and technology has played an obvious and crucial role in these processes of becoming an export-based manufacturing economy. In Taiwan, the number of students in the sciences has been extremely high, with this trend starting in the 60's. To keep up with this expansion, the number of studying technical subjects in short-cycle institutions was very high in the seventies and this started declining in the eighties. In Taiwan, the science and technology sector kept up with their industrial needs unlike

many other parts of Asia. Like China, Taiwan also implemented programs with a bent toward applied sciences but while China stressed production problems often related to agriculture. This trend assisted Taiwan in developing new technologies that helped them expand their economy during the seventies and eighties. Taiwan has actually done an admirable job of managing education to economic growth patterns so that the number of employment opportunities appropriately matched the educational levels of students. As Taiwan moves further along in the sophistication of their economic and scientific/technological modernization processes, they are requiring greater numbers of workers with higher education. (Far East and Australia, 1998)

In terms of the non-scientific educational sectors, Taiwan has increased the number of students in the humanities and social sciences in relatively small proportions, and these are predominantly women, who more than likely will serve as teachers in the primary and secondary school systems and other service-oriented jobs. This trend is not unique to Taiwan; in fact, it appears to be fairly universal in higher education systems.

China

During the time of Chairman Mao, China's science programs were generally used to increase production rather then develop technologies. Currently, China is beginning to develop their science and technology programs quickly as 68% of all students in 1990 were enrolled in Science and Technology (S&T). In 1980, there were only 4 universities in S&T. Most of the universities were geared to applied sciences and followed the Soviet model of separation of S&T with teaching. (Law, 1995). During this period, three types of institutions sponsored scientific and technological research: Four higher education institutions, The Chinese Academy of sciences, and research institutes under various

ministries (Law, 1995). In the 1980's interdisciplinary schools and faculties were established, the Soviet seperationist system was abandoned and some of these institutions added new courses in economics, humanities and pure sciences. By 1988, 1,715 research institutes were established in higher education facilities. Furthermore, the percentage of research projects in Shanghai's universities increased from 23.2 in 1988 to 39.4 in 1991 (Law, 1995). China had a growing enrollment in their higher education systems and an increasing number of peasants until the 1960's when the 3 years of famine hit and the Cultural Revolution began. However, the number of peasants were not enough and Mao intervened. The steps towards mass higher education were halted. Short-term training courses were implemented in favor of 4-year university education. In the 1970's universities were reopened and enrollments began again, but still the higher educational system's ability to offer adequate numbers of scientific and technical training programs is lagging behind many modernized nations.

When considering the humanities and social sciences, these areas are quickly becoming understaffed and under-enrolled in China (Law, 1995). It seems that the majority of Chinese students view science, economics and business as a method to "get ahead" in the new economy. Clearly, the Chinese are creating a "technocracy" rather than implementing a broader cultural transformation. Women are enrolled in greater numbers in humanities, social sciences and teaching colleges in China, although the number of women in science and technology is greater than the rest of Asia and North America.

Short Cycle Institutions

Table 3

Short Cycle (Junior Colleges) Institutions in Taiwan

Year	Junior Colleges -- % of Total
1968	74
1970	80
1980	74
1990	62
1995	55
1997	44

Note: Derived from the Statistical Yearbook of the Republic of China, p. 76.

Taiwan

Table 3 displays the trend of short-cycle institutions in Taiwan. According to Hayhoe 1995, the Taiwanese developed a short-cycle system that met the needs of providing middle management technical positions in the right quantities at the right times. Taiwan developed a system of education from the beginning with a "short-cycle" track or vocational educational system built-in. Because of the rapid expansion of their economy due to an export-based policy, it was not necessary in the beginning to have many technical and vocational positions filled with 4-year graduates. Therefore, there was the establishment of junior college and technical schools in great number in the 1960's and 1970's in Taiwan. As with Japan, a large number of junior colleges were private. As the

economy of Taiwan has matured, and integrated it economy with the world markets, the number of 4-year degree institutions has grown. As a result of the economy is moving more toward a service based economy and the population is aging, graduate school enrollments are also increasing: In 1970 there were 2,295 student enrolled; In 1980, there were 6,306 graduate students; and in 1990, there were 22,372; In 1997, the number of graduate students enrolled increased to 48,619. (International Bank, 1999). In summary then, it appears that the short-cycle system in Taiwan served to produce a measure of equality as it has been utilized efficiently for producing the requisite number of individuals for middle-level positions at the appropriate times. However, the vocational track has seen its heyday. It may be that the children of those parents who attended short-cycle schools provided the necessary springboard for their children into higher education.

China

Below the four-year university system is the adult education sector, also called, "short-cycle" at the state universities. China had a high percentage of short cycle schools in the 1970's. Before the Cultural Revolution, there were 4-5 years programs but these schools were closed in favor of the short-cycle institutions. This trend occurred in order to open up more opportunities for women and peasants and further break-down the caste of the educated elite. Since the 1980's, the trend has reverted back to a 2-tier system with 4-year degree programs receiving precedence. This 4-year sector is growing rapidly in the Chinese economic expansion. China expects to have 7-8 million students in tertiary education by 2,000 with 3.5 million in the short-term sector.

While short cycle programs are generally considered less desirable than 4-year degrees, this is not always necessarily true in China. The short cycle programs at key

urban universities are considered more prestigious than their rural 4-years school programs. As a consequence, the number of short-cycle programs continues to grow and employ individuals in mid-level technical positions. This outcome cannot yet be measured because of the effects of China's market-socialist economy is too new. What does appear to be happening is that there is a great shuffling occurring due to economic and political factors.

Conclusion and Additional Thoughts

Both countries have had to struggle to improve their educational systems from their humble beginnings in the late 1940's when their illiteracy rates were extremely high. Both have had to implement educational reform measures although the ones in Taiwan were fewer in number and severity than those in China.

As China has been suffering inflation, the academics must seek employment outside the university. This restricts the government's control over them. Moreover, with the establishment of greater numbers of private universities, there is less control of faculty's salaries. To make the situation worse, many professors have left their teaching posts for business jobs. Teachers are no longer state employees but have become university employees. In 1985, university presidents were given more power in to manage the institutions and its personnel but this was rescinded in 1989 after the Tiananmen Square protests. The presidents are still State appointed and currently, the universities are run by politically appointed committees to insure that these institutions are agents of the State.

In essence, the decentralization movement has had some positive effects but the centralization that currently exists has not been necessarily to promote better and more

homogenous curriculums. Rather, centralization has been used to maintain control over the beliefs and attitudes of the youths that will be participating in the respective Chinese societies in the future (Law, 1995).

Because in Taiwan centralization measures maintained by the government have been more for political reasons that ones of educational equality and equity, the private institutions have declined to nearly unacceptable standards in some cases. In Taiwan since 1987, there has been a lifting of Martial law resulting in a power struggle between the Ministry of Education and the university academics for control over university policy and procedures. Traditionally, the university system in Taiwan was run by academics whose participation in their party was compulsory. Teachers have been unionizing since 1989 and have requesting a change between higher education and the State. As a result, all department heads and deans in many schools have been elected and nominated by the teachers rather than the ruling CNP. Since 1992, the academics have also had more say in the appointment of president heads, but they are still not completely autonomous as they are required to be members of the as State as well. In Taiwan, research into the period of Marshall law is still not perceived as safe as evidenced by many academics refusal to examine those years (Law, 1995). Some advocates of democracy consider that the quality of education may suffer as result of the intelligensia having to comply with State policies and repress their freedom of speech. This may also be an issue in China as well as the government has reintroduced tighter control of faculty and students most notably due to the 1989 student demonstrations.

However, in China, there appears to be more control over the functioning of private institutions of higher education, they may be of better standards than Taiwan..

Moreover, it seems that the Chinese private institutions are attracting both good faculty and good students offering courses not often provided by the State schools. As to the efficacy of these schools, no data has been gathered yet.

In viewing the current statistics, we find that the number of women serving and enrolling in higher educational institutions is approximately equal in both countries. While China is lagging behind in their implementation of tertiary educational systems, they are extremely focused on their advancements in science and technology almost to the exclusion of the social sciences and the humanities (Law, 1995). It appears that China is in danger of losing all the measures of equity enforced during the Mao era, as women are concerned about losing ground in the new market socialist economy. Although China has often touted the notion of equality of the sexes, a further examination into their culture and the women's lack of participation in the government may indicate that China may not be as concerned with women's roles as previously thought.

Both China and Taiwan have devoted the most money to engineering research and least amount to humanities. In 1985, the expenditure was 17,947 million TD in engineering and humanities/social sciences had expenditures of 597 million TD, or approximately 30% of the engineering expenditures for research. By 1996, the figure for engineering reached 107,993 million TD and humanities/social sciences expenditures had only grown to 4,733 million TD or approximately 4% of the engineering expenditures. (International Bank, 1999) It is not difficult to determine that the growth emphasis in the Taiwanese economy has been technocratic.

In China much the same things appear to be occurring. Chinese private universities are offering curriculum not offered in the public schools in the areas of foreign trade, hotel

management, stock exchange and finance. (Law, 1995) Moreover, the number of patent applications in 1996 was over 50,000 considering local and non-residents from within China. In 1997, 21% of all imports were high tech. In 1990, China did not receive any payment for royalty and licensing fees but in 1996, had received $55M (World Bank, 1999). Clearly, high-tech and science is growing at a rapid pace and has been additive to the Chinese economy. This of course can have positive effects on an economy but as there are many academics leaving their university positions or working two jobs to keep up with inflation, this may have another deleterious effect on higher education programs. According to Law (1995), the humanities and social sciences schools are experiencing the greatest declines in enrollments and faculty support.

A significant change in the Chinese educational system has been the reinstitution of standardized college-entrance exams. These exams were a regular part of the mechanism for upward mobility in China prior to the 1960's Cultural Revolution. During the experimentation of those years, anti-traditionalists were able to eliminate the entrance exams by arguing that they favored an elite who had an intellectual tradition in their families. When colleges reopened from 1970 to 1972, admission was granted to many candidates because of their political leanings, party activities, and peer-group support. This method of selection ceased in 1977 as Deng Xaoping launched his campaign for the Four Modernizations: modernization in agriculture, industry, defense, and science and technology. These disciplines required higher levels of academic training. Such educational programs by necessity had to be based on theoretical and formal skills more than on political attitudes and the spirit of revolution (Encarta, 1995). However, as a result

of student disturbances in 1989, university students are again required to complete one year of political education prior to entering college (Law, 1995).

This situation is also problematic in that the greatest number of students are from the urban areas where the best schools are located. Therefore, the best students are generally from the urban areas and those educated in Beijing and Shanghai are, not surprisingly, better equipped for higher education. Other problems arise when considering equality in that China has had to abolish its government job guarantees as the Chinese move to mass higher education. Despite all their previous efforts to abolish the elite, they are watching closely the issues of nepotism and the very low numbers of rural students enrolled in higher education. Additionally, rural students in China pay more for their basic education than urban dwellers, they may be less inclined to participate in higher education, especially if jobs become available in the booming economy which will help remedy their hardships caused by higher levels of inflation (Bray, 1996).

In summary, China can learn from the educational systems in other parts of the world, but at this time, it is suspected they may incur similar problems of other countries in terms of equality issues. Some of the most pressing points are nepotism, schooling in rural areas and the decline of women's participation.

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